

REMARKS

Applicant's counsel thanks Examiner Nguyen for the careful and thorough examination of the present application.

Claims 1 and 32 have been amended to incorporate substantive limitations from claims 10-12 previously pending. Claims 13-16 and 20-21 have been amended to correct antecedent basis based on the amended claims. Claims 10-12, 18-19, 22-26, 30-31 and 35-37 have been canceled without prejudice. No new matter has been entered.

The Examiner has objected to claim 15, and proposes to substitute "balance ceramic filler and/or binder material," with "balance with at least one of ceramic filler and binder material." Respectfully, it is submitted that "and/or" is clearer in this context, and clearly indicates that the balance of the intumescent mat includes one or the other or both. While the Examiner's proposed language may achieve the same objective, the "and/or" language is preferable because it is clearer and simpler. Accordingly, it is respectfully requested the Examiner withdraw this objection, because the meaning of the present terminology in claim 15 is clear to a person of ordinary skill in the art.

Claim 1 has been amended to incorporate the substantive limitations from claim 12 (including intermediate claims 10-11). Claims 10-12 have been canceled to avoid redundancy. Accordingly, claim 1 now recites, *inter alia*, "a strain isolation layer disposed between said insulation layer and said outer structural layer, said strain isolation layer comprising an intumescent mat that expands on heating and is effective to dampen unmatched thermal expansion between said outer structural layer and said insulation layer." Claims 11-12, which previously embodied these limitations, were rejected under 35 USC § 103(a) as being obvious over Haselkorn in view of Foster. The rejection is respectfully traversed.

To establish a *prima facie* case of obviousness under § 103(a), there must be some suggestion or motivation, either in the references themselves or in generally available knowledge to combine teachings in different references. The "suggestion to make the claimed combination...must...be found in the prior art, not in applicant's disclosure. MPEP § 2143, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Respectfully, there would have no motivation to combine Haselkorn and Foster as suggested by the Examiner, to arrive at the presently claimed invention.

Haselkorn teaches an exhaust assembly having an inner gas passageway, a liner (6) made of ceramic material (col. 4, lines 56-57), and two layers of insulating elements (10,12) (col. 3, line 33), which are quilted and have ceramic fiber (26) encased in fiberglass (28). There is no mention in Haselkorn that these layers can be used or are effective to dampen unmatched thermal expansion between the outer layer (16), which is an iron housing (col. 3, line 50), and the ceramic layer (6). The Examiner has acknowledged that Haselkorn does not disclose a strain isolation layer comprising an intumescent mat, and has relied on Foster for this teaching.

Foster discloses essentially an apparatus to suspend a catalyst support body 14 within the exhaust gas passageway for exhaust gas, e.g. for a catalytic converter. See col. 2, lines 35-48, describing how the “substrate 14” is retained in place by a “retention material 16” so that undesirable emissions are eliminated from exhaust gas passing through the substrate 14, e.g. retained in the exhaust pipe.

Applicant acknowledges that Foster discloses the retention material 16 therein can be an intumescent material. However, that material is used in that reference to hold a catalyst support (“substrate 14”) in place; it is not used (nor is there any suggestion) to use an intumescent material to accommodate and dampen unmatched thermal expansion between an outer structural layer and a ceramic insulation layer of a manifold. For one thing, there is no ceramic insulation layer in Foster.

The catalyst support structure described in Foster is totally different from the composite exhaust manifold structure disclosed in Haselkorn. It is inappropriate to select one feature from Foster, the intumescent retention material 16, and suggest it would be obvious to use that material in another reference for a totally different purpose than contemplated in Foster.

The only motivation cited by the Examiner for the proposed combination is as follows: “It would have been obvious to...have utilized the teaching by Foster et al. in the manifold of Haselkorn et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art.” Respectfully, Foster does not establish this. All Foster establishes is that it was known to use an intumescent material as a retention material to hold an emission control substrate 14, such as a catalyst support body, in place within an exhaust pipe or a catalytic converter. It does not teach or suggest using an intumescent material, that expands on heating, as one of the composite layers in a composite exhaust manifold, to dampen unmatched

thermal expansion between a ceramic insulation layer provided exterior to a ceramic inner layer, and an outer structural layer.

In summary, neither Haselkorn nor Foster provides any independent motivation to combine its teachings with those in the other reference to arrive at applicant's claimed invention. To do so requires hindsight selection of particular components from each reference, and the combination of them with no reason to do it except as suggested by the present application.

The lack of motivation is even clearer when one considers Haselkorn does not have any layer to isolate strain between outer and insulation layers. The Examiner has taken the position that layer 12 in Haselkorn is a strain isolation layer. Office action, p. 5. However, *this layer is an insulation layer*, just like layer 10, and is made from the same materials as that layer. See col. 3, line 35 and col. 4, lines 4-10 in Haselkorn. It is not evident that this layer will have any effective strain isolation properties, i.e. effective to dampen unmatched thermal expansion as now recited in claim 1. Haselkorn itself provides no suggestion to incorporate a separate layer for the specific purpose of strain isolation; i.e. to damping unmatched thermal expansion between opposing layers. Accordingly, the rejection of prior claim 12 (now claim 1) depends not only on selecting a particular element from Foster and using it in a different way than disclosed in Foster, but it also requires inserting a new element in Haselkorn that is nowhere contemplated or suggested in either reference.

Accordingly, because there is no proper motivation to combine the teachings of Haselkorn and Foster, it is respectfully submitted that the rejections of prior claims 11 and 12, now incorporated into claim 1, have been overcome.

Claim 32 has also been amended to incorporate the substantive limitations from claims 11 and 12 previously pending. Accordingly, claim 32 is submitted to be allowable for the same reasons as claim 1 discussed above.

Claim 33 has been rejected under 35 USC § 103(a) as being obvious over Prigent et al. (hereinafter "Prigent") in view of Official Notice. The Examiner argues that Prigent discloses "a ceramic inner layer (4) defining an exhaust gas passageway of the manifold..., the ceramic inner layer comprising a catalyst (line 66 of column 3 to line 2 of column 4)." Office action, p. 10. Respectfully, the rejection is traversed. Layer 4 in Prigent is not a ceramic layer; it is a separate catalytic layer that is provided in the form of noble metals deposited on the underlying metallic layer 2. See col. 3, line 66 to col. 4, line 2, as well as Fig. 2, which clearly shows the catalyst

and manifold layers (layers 4 and 2, respectively) are discrete layers. See also col. 3, line 23, indicating layer 2 is a metallic layer. In fact, Prigent nowhere discloses a ceramic layer. Conversely, claim 33 recites a *ceramic* layer that *comprises* a catalyst. That is, catalyst is contained within and forms a part of the ceramic layer. This is not disclosed in Prigent for the reasons set forth above. Accordingly, the rejection of claim 33 is also believed to be overcome.

In summary, the rejections of claims 1, 32 and 33 are respectfully believed to be overcome, for at least the reasons discussed above. All remaining claims are dependent claims. Therefore, all claims are believed to be in condition for allowance.

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Respectfully submitted,

PEARNE & GORDON LLP

By: 
Steven J. Solomon, Reg. No. 48719

1801 East 9th Street, Suite 1200
Cleveland, Ohio 44114-3108
Phone: (216) 579-1700
Fax: (216) 579-6073

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